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*Title:* **An Improved Tamper-Indicating Seal**

*Author(s):* Roger G. Johnston

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Los Alamos
NATIONAL LABORATORY



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**1. Title: An Improved Tamper-Indicating Seal**

**2. Author: Roger G. Johnston, Ph.D., CPP**

**3. The Problem:**

**A small U.S. company was developing a new type of inexpensive tamper-indicating security seal. This small company lacked the resources or experience to fully evaluate the seal and optimize its design for maximum security. The company realized that a vulnerability assessment performed early in the design process--while changes could still be readily made--would be of greater value than an assessment performed after the design was finalized.**

**4. The Response**

**The company sought the assistance of the Vulnerability Assessment Team (VAT) at Los Alamos National Laboratory. The VAT has extensive experience in performing vulnerability assessments for government agencies and private companies. It offers practical suggestions for improving tags & seals, as well as overall security programs.**

**The company was able to obtain this assistance for free in late 1997 as part of the Small Business Technical Assistance Program at Los Alamos National Laboratory. The VAT evaluated the security seal design and offered a number of suggestions for improvements. These included minor design changes, alternate choices for materials, possible novel applications, and recommended use protocols.**

**5. The Outcome**

**The company was surprised to learn about some of the easily exploited vulnerabilities demonstrated by the VAT that had been overlooked in the initial design. A number of VAT suggestions for reducing these vulnerabilities were implemented by the company. The redesigned seal was then re-evaluated by the VAT, which resulted in additional suggestions for improvements. Some of these suggestions were incorporated into a 3rd generation design. This iterative approach was deemed to be highly effective.**

**As a result of this assistance, both the company and the VAT believe the seal has significantly greater resistance to defeat. This**

**was accomplished with relatively minor modifications to the seal and at nearly no cost to the company.**

## 6. Follow Up Action

**The assistance provided by the VAT in 1997 was recognized with an Excellence in Technology Transfer Award. The company is seeking additional assistance from the VAT in 1998 for more advanced versions of the seal.**